MOVING PEOPLE AND GOODS
TRANSPORTATION ELEMENT OF THE DVRPC YEAR 2020 PLAN

Direction 2020 Report No. 24

Delaware Valley Regional Planning Commission
The Bourse Building - 8th Floor
111 South Independence Mall East
Philadelphia, PA 19106-2515

JULY 1995

The preparation of this report was funded through federal grants from the U. S. Department of Transportation's Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA), as well as DVRPC's member governments. The authors, however, are solely responsible for its finding and conclusions, which may not represent the official views or policies of the funding agencies.

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty and intercity agency which provides continuing, comprehensive and coordinated planning for the orderly growth and development of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties as well as the City of Philadelphia in Pennsylvania and Burlington, Camden, Gloucester, and Mercer counties in New Jersey. The Commission is an advisory agency which divides its planning and service functions among the Office of the Executive Director, the Office of Public Affairs, and four line Divisions: Transportation Planning, Regional Information Services Center, Strategic Planning, and Finance and Administration. DVRPC's mission for the 1990s is to emphasize technical assistance and services and to conduct high priority studies for member state and local governments, while determining and meeting the needs of the private sector.

The DVRPC logo is adapted from the official seal of the Commission and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River flowing through it. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey. The logo combines these elements to depict the areas served by DVRPC.

DELAWARE VALLEY REGIONAL PLANNING COMMISSION

Publication Abstract

TITLE	Date Published: July 1995
MOVING PEOPLE AND GOODS: **Transportation Element of the DVRPC Year 2020 Plan** ***Direction 2020 Report No. 24***	**Publication No. 95001**

Geographic Area Covered:

Bucks, Chester, Delaware, Montgomery counties and the City of Philadelphia in Pennsylvania; Burlington, Camden, Gloucester and Mercer counties in New Jersey

Key Words:

Air Quality, Congestion, DIRECTION 2020, Goods Movement, Highway Plan, Implementation, ISTEA Requirements, Long Range Plan, Mobility, Public Transportation Plan

ABSTRACT

This plan is the adopted long range transportation plan for the nine county region prepared in accordance with the requirements of the Intermodal Surface Transportation Efficiency Act and in conformity with the requirements of the Clean Air Act Amendments of 1990. It contains a financially constrained set of regionally significant projects and policies as well as a listing of future studies which are intended to accomplish regionally adopted goals for the transportation system in light of future demand for this system as studied for the target year of 2020.

For More Information Contact:

Delaware Valley Regional Planning Commission
Donald S. Shanis, Ph.D., Transportation Planning Division
The Bourse Building - 8th Floor
111 South Independence Mall East
Philadelphia, PA 19106-2515
(215) 592-1800

Table of Contents

List of Tables

List of Figures

ABBREVIATIONS USED IN THIS DOCUMENT

CAAA	Clean Air Act Amendments of 1990
CBDs	Central Business Districts
CFR	Code of Federal Regulations
CMAQ	Congestion Mitigation and Air Quality
CMS	Congestion Management System
DOT	Department of Transportation
DRPA	Delaware River Port Authority
DVRPC	Delaware Valley Regional Planning Commission
EB	Eastbound
EPA	Environmental Protection Agency
ETRP	Employer Trip Reduction Program
FAA	Federal Aviation Administration
FRA	Federal Railway Administration
FTA	Federal Transit Administration
GMTF	Goods Movement Task Force
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
IVHS	Intelligent Vehicle Highway Systems
LRT	Light Rail Transit
MIS	Major Investment Study
MPO	Metropolitan Planning Organization
NHS	National Highway System
NJDEP	New Jersey Department of Environmental Protection
NJ DOT	New Jersey Department of Transportation
NPIAS	National Plan of Integrated Airport Systems
PA DER	Pennsylvania Department of Environmental Resources
PATCO	Port Authority Transit Corporation
PennDOT	Pennsylvania Department of Transportation
PTAF	Public Transportation Assistance Fund
PUT	Pottstown Urban Transit
SEPTA	Southeastern Pennsylvania Transportation Authority
SIP	State Implementation Plan
STP	Surface Transportation Program
SOVCAP	Single Occupant Vehicle Capacity
TCM	Transportation Control Measure
TDDs	Transportation Development Districts
TIMS	Transportation Incident Management System
TIP	Transportation Improvement Program
TMA	Transportation Management Association
TTF	Transportation Trust Fund
UPWP	Unified Planning Work Program
U.S.C.	United States Code
VMT	Vehicle Miles of Travel

SUMMARY

This document, *Moving People and Goods*, presents a comprehensive long-range transportation plan for the Delaware Valley Region to the year 2020. It contains a set of policies, a list of projects and a proposal for major studies. These recommendations result from an extensive public outreach program. They promote air quality objectives and match anticipated funding levels.

Moving People and Goods fulfills federal requirements for preparation of a long-range transportation plan by the metropolitan planning organization. The investments and initiatives cover all modes including public transit, highway, bicycle and pedestrian, aviation and freight.

The Need for a Transportation Plan

According to DVRPC projections, the number of personal vehicles available to area residents will increase by one million over the 1990 number to 3.8 million. Growth in auto ownership in the New Jersey counties will be particularly acute—almost 50%. This rise is attributable to both an increase in population, and a higher rate of auto ownership. For every 100 persons in 1990, there were 53 automobiles; in 2020, 100 persons will own 65 automobiles.

A continuation of the trends in which residential and employment growth is dispersed throughout the outer areas of the region will further tax the region's network of highways. Automobile trip-making will increase and so will the average trip length. As residents and jobs become more scattered, it becomes more difficult to effectively accommodate home-to-work travel with transit service. Consequently, if recent trends were allowed to continue, a decline in the total number of transit trips in the region would be expected.

Not only will trip-making increase for residents of the region, but travel *into* the region is anticipated to grow 44% in the thirty-year period. This increase is caused not only by the growth of interstate travel, but also by an increase in commuter trips into the region as employment sites on the periphery continue to attract workers who live outside the region.

These increases in vehicles and trips dictate that improvements must be made in the region's transportation facilities.

Linking Land Use and Transportation

In preparing DVRPC's long-range land use and transportation plan — *DIRECTION 2020* — an important concept was to view the problems of growth and transportation as a single, interrelated condition. Therefore, project teams of transportation and land use planners worked together to prepare the elements of the plan.

Focus was placed on distinct travel and land-use corridors and centers within the region. The corridors usually include several parallel highway and transit routes while centers often represent locations

where transportation facilities converge. A planning process was developed in which the best transportation and land-use solutions would be recommended in the context of the surrounding development and regional travel patterns.

The *Centers and Corridors* study assembled a plan for each corridor and center, showing conditions, trends, and problems and land use and transportation recommendations. Maps showing existing land use and transportation facilities were prepared for each center and corridor. A draft was then circulated to member governments and agencies as well as other interested parties. During the review process, projects were described as either short- or long-term based upon need and perceived acceptability.

Moving People and Goods

This document, *Moving People and Goods,* details the regionally significant policies and projects needed to support and influence the anticipated growth in travel. The plan conforms to federal guidelines, including the Intermodal Surface Transportation Efficiency Act (ISTEA) and the Clean Air Act Amendments of 1990 (CAAA). Specifically, the fifteen "planning factors" listed in the metropolitan planning regulations were considered.

Policies

The first step in the planning process was to establish goals and objectives. Next, policies were developed to accomplish these goals and objectives. Twelve of the policies relating to transportation are listed in the report together with the strategies recommended to make them effective. Finally, 80 specific actions, together with the responsible agency, are listed.

Programs

Recognizing the enormous worth of the region's present transportation systems, the Plan puts forth three programs to provide for their ongoing management. Managing the transportation assets involves two tasks: First, and most critical, is the *preservation* of the current system. The second aspect involves more effective use of the system through the use of *intelligent transportation systems* (i.e., advanced communication technologies) and *demand management* strategies.

The Plan encourages several types of strategies which are aimed at improving mobility by lowering the demand for travel. These travel demand management (TDM) strategies foster increased efficiency of the transportation system by influencing employee travel behavior by mode, time, frequency, trip length or route.

Components of a DVRPC Travel Demand Management Program

- Ridesharing
- Park and Ride Lots
- Parking Management/Pricing
- Bicycle/Walking Facilities
- Guaranteed Ride Home
- Staggered Work Hours (Flextime)
- Compressed Work Week
- Telecommuting
- Public Relations and Education

Projects

Roughly 200 projects which serve the goals of the plan emerged from the planning process. These include the following major projects to be completed in the short-range — prior to 2005, by which time the region is to meet air quality standards for ozone:

- Burlington-Gloucester Transit Line
- Chestnut Street Transitway restoration
- FastShip Terminal
- I-95 reconstruction from NJ to DE
- I-95 interchange at I-276 (PA Turnpike)
- I-95 interchange at Aramingo/Torresdale
- Market-Frankford Line renovations
- NJ 92 construction (Hightstown Bypass)
- Newtown rail line restoration
- North Philadelphia light rail conversions
- PA 63 (Woodhaven Road) completion
- Philadelphia International Airport runway
- Regional rail line extension to Wawa
- 15 transportation centers
- 22 other corridor improvements

After 2005, but before the horizon year of the plan, 2020, the following major projects will be completed:

- Atlantic City Expressway at CR 689
- Market West Subway Station
- US 202 Montgomeryville to PA 611 Bypass
- 3 transportation centers
- 13 other corridor improvements

In addition to these major projects, systemwide improvements include reconstruction of existing facilities, transit facilities and vehicles, bicycle and pedestrian improvements, park-and-ride lots, ramp construction, signal systems and signing, intersections and spot locations, access controls, and congestion management systems.

Recommended Studies

The Plan also recommends a series of studies. In some instances, the nature of an improvement to meet an identified transportation need is not known in sufficient detail to warrant inclusion in the Plan as a project. In other cases, a major investment study (MIS) must be completed before certain anticipated large highway or transit projects may receive federal funds.

MISs are required to ensure that a regional need is apparent after a detailed examination of alternatives. The Federal Transit Administration and the Federal Highway Administration have specified the types of projects which require an MIS. Projects in the plan which require a major investment study (MIS) include the following:

- Burlington-Gloucester Transit Lines
- I-95 Intermodal Mobility Project
- I-95/I-276 Interchange
- NJ 92 (Hightstown Bypass)
- PA 63 Woodhaven Expressway Extension
- US 202—Section 700

As studies are completed and projects identified, *Moving People and Goods* will be updated.

Focused Complementary Plans

In addition to the preparation of *Moving People and Goods*, DVRPC is completing plans for three other transportation elements—airports, bicycles & pedestrians, and freight travel. The policy and project recommendations from these plans are included in the Plan.

Aviation Plan

The *Year 2020 Regional Airport System Plan* offers a comprehensive examination of airport system needs. Much like the approach taken towards highways in *Moving People and Goods*, the major emphasis of the plan is on preserving the existing airport system, with a few significant increases in capacity. Total projected cost of the plan is $740 million.

Highlights of the Aviation Plan

- Prompt Federal Aviation Administration (FAA) funding assistance for the addition of runway 8-26 at Philadelphia International Airport
- Public acquisition of privately-owned airports which are critical to the needs of suburban areas or as additional reliever facilities
- Expanded ramp space, hangars and runway lengths at selected airports to accommodate business aircraft needs
- Enhanced NAVAIDS and precision approach capabilities where needed for business aircraft
- Additional heliport capacity in central business districts to supplement existing capacity at Philadelphia International Airport

Bicycle and Pedestrian Mobility Plan

The *Bicycle and Pedestrian Mobility Plan* identifies a vision—goals and objectives—to promote the creation of a 1900-mile bicycle network and to improve pedestrian access in Southeastern Pennsylvania. Land use, transportation, safety and security, enforcement, education, and funding improvements are also identified. Nearly 1400 miles of routes are specified along state, county and local rights-of-way. More than 350 miles of new, dedicated off-road routes are also planned along with an additional 334 miles of undefined alignments.

The plan will soon be extended to cover the counties in New Jersey.

Intermodal Freight Plan

The Intermodal Freight Plan focuses on intermodal freight systems and facilities in the region. Intermodalism is broadly defined as the movement of goods via two or more modes of travel. This plan is targeted at those commercial aviation airports, waterports, and truck-to-rail facilities where such exchanges of goods occur.

The plan has four primary components. They are:

- A catalogue of regionally significant intermodal facilities and historic usage
- A detailed example of intermodalism
- A vision of the model intermodal freight network in the year 2020
- A set of recommended projects and

studies to improve critical features of the system

One objective of this document is to illuminate fundamental operating aspects of the intermodal transportation environment. This is important because of the unique convergence of private and public interests involved. It is also envisioned as establishing a foundation for effecting and coordinating intermodal freight transportation infrastructure improvements in the Delaware Valley.

Highlights of the Freight Plan

- Provision of marine terminal with necessary highway and rail access for the *FastShips* (high speed cargo ship technology) initiative
- Improved highway/rail grade crossings in Delaware County, Bridgeport, Camden, and elsewhere
- Increased rail intermodal capacity in South Philadelphia
- Institution of Electronic Toll and Traffic Management (ETTM) technologies such as *EZ Pass* for commercial and other vehicles
- Timely construction of key highway improvements such as the I-95 reconstruction which have a large impact on freight operations

Air Quality Considerations

Federal law requires that urban area long-range transportation plans demonstrate *conformity* with the goal of air quality plans. Transportation plans are said to conform if emissions from highway vehicles decline to specified levels and meet several other tests. Highway emissions in total must be (a) less than they were in 1990, (b) less in the case that the projects in the plan are completed than if they are not, and (c) less than any emissions budgets established by the states.

The conformity demonstration to be conducted must meet federal and state rules. The rules include the use of complex travel demand modelling techniques and the latest version of the federal emissions model. Finally, the work must be done in consultation with transportation and environmental agencies and in view of the public.

In the demonstration of conformity, most of the reductions in emissions from highway vehicles are attributable to technological improvements such as federal motor vehicle controls, reformulated fuels, and emissions inspection and maintenance programs. However, the transportation improvements in the plan also help improve the air.

Together, these factors permit a 75% decline in the emissions in spite of increasing vehicle ownership and vehicle travel. Between 1990 and 2020, the number of vehicles per person is anticipated to increase by 22% and travel miles per person by 19%. The improvements in the plan allow the average speed on the region's highways to remain relatively unchanged.

FINANCIAL PLAN

What Will the Plan Cost?

DVRPC estimates the cost of the *Moving People and Goods* facilities and programs to be about $21.0 billion in 1995 dollars. The bulk of the cost will be for operating and maintaining the present highway and transit systems, although a sizeable portion will be allocated to new transit facilities and services. Most of the funding for highways is devoted to relieving congestion, providing new connections, allowing for freight travel and making better use of existing roadways.

How Will the Plan be Paid For?

Roughly $21 billion is anticipated to be available from traditional sources over the 25-year period. This estimate assumes periodic reauthorization of the federal surface transportation act at current levels and makes the further assumption that there will be the necessary increases in the sources of these funds—both basic and matching.

As a result we can say that the recommendations of the plan have been constrained to reasonably anticipated resources. However, it needs to be emphasized here that the recommendations of the plan are not intended to be viewed as a complete picture of the region's transportation needs. As an illustration of this point, the effort was made to determine the costs associated with some realistic projects which may evolve from the recommended studies list. This exercise yielded an additional $9.4 billion in potential improvements which have no current funding source. Such work would need to either replace existing projects in the plan or make use of new funding sources in order to be accomplished. The citizens of the region are encouraged to help their elected officials decide how the region should proceed. □

I INTRODUCTION

The safe and reliable provision of transportation for people and goods is a daily matter of economic and social well-being and often of life itself. During the afternoon and evening of Thursday, July 14, 1994, the Philadelphia metropolitan area experienced a strong reminder of the importance of its transportation network to daily living and the fragile nature of that network. A powerful thunderstorm swept through the region, flooding roads and disrupting electrical and communication systems. More than five inches of rain fell in Bala Cynwyd in just one-half hour. PECO Energy noted more than 4,000 lightning strikes in its service area in just one hour.

The impact of these conditions on area roads was described in the *Philadelphia Inquirer* by one motorist as "exquisite gridlock" as drivers were stuck for hours in localized, flooded areas and as open roads became overwhelmed by diverted traffic. The Schuylkill Expressway was closed by 6:00 p.m. when it became flooded between Montgomery and City Avenues. The Walt Whitman Bridge, as well as part of I-95, were also closed.

All of SEPTA's regional rail and subway-surface lines were shut down until shortly after 8:00 p.m. The regional rail problems were due in large part to a lightning strike which destroyed a transformer at Wayne Junction and a malfunctioning converter (which moves trains from one track to another). The Broad Street subway was also closed north of Girard Station due to flooding. SEPTA's central computer system was also disabled during the storm, breaking communication between the agency and its bus drivers. At 5:30 p.m., four people were struck by lightning as they stood in water waiting for a SEPTA bus at Broad Street and Erie Avenue.

Perhaps the most frightening aspect of the severe weather and the loss of transportation was felt in New Jersey as flooding took on more dramatic proportions. Two police officers in Camden, after rescuing an elderly couple from a deluged car, returned to their cruiser to find that it had floated several blocks away. Over 150 calls for assistance went unanswered in Cherry Hill as the township patrol cars sat in four to six feet of water.

While this incident is by no means the most dramatic experienced in the region, it does demonstrate that extreme weather, as well as problems with the existing network and human error, have periodically created or exacerbated transportation disruptions. Because it is subject to the imperfections of man, machine and environment, transportation can never be made either perfectly safe or perfectly reliable. Rather, it is in realizing the importance of transportation to our daily lives that we seek to improve its safety, efficiency, and reliability recognizing our imperfect environment and limited resources.

As part of its mission, the Delaware Valley Regional Planning Commission brings together federal, state, and local governments and other transportation providers in the nine county Delaware Valley area to provide for the coordinated planning of future transportation

improvements. The DIRECTION 2020 initiative is set forth in a series of documents and provides detailed long-range guidance for both the transportation network and for future land development patterns to further optimize its use. This portion of DIRECTION 2020, *Moving People and Goods*, summarizes the planned policy and network changes to improve regional transportation that are found in greater detail in *An Agenda for Action*, Report No. 21 and *Land Use and Transportation Plan: Centers and Corridors*, Report No. 22.

THE MPO PROCESS

The *Moving People and Goods* portion of the DIRECTION 2020 initiative serves as the official, adopted long range plan for the metropolitan planning area as required by federal regulation.[1] In this regard, long range plans help to direct regionwide transportation decision-making for urban areas of the country over a period of at least 20 years. These policy documents are adopted by consensus of the affected local governments in concert with state transportation agencies, transit authorities and other parties, through the forum of the Metropolitan Planning Organization (MPO).

An MPO's jurisdiction may cover all of the existing urban area defined in the U.S. census and any additional area presumed to become part of the urban area over the 20 year planning horizon. If an MPO exists in an area where the air quality falls below federal Clean Air Act standards for either ozone or carbon monoxide pollutants (such areas are referred to as *nonattainment areas*), the entire area that fails to meet these standards must be addressed. More than one MPO may exist in a nonattainment area if the governor(s) "determines that the size and complexity of the urbanized area" justifies such multiple designations,[2] but planning efforts must be coordinated to achieve federal objectives.

Long range plans do not specify the design of actual projects. Rather, they identify future needs to address transportation deficiencies. Identification of specific projects to be undertaken is accomplished in a separate document published annually or biennially by the MPO, entitled the Transportation Improvement Program (TIP). Projects to receive federal funding must appear in an urban area's TIP. For any individual project, one prerequisite for inclusion in the TIP is that such a project must be "consistent with the long range plan".[3] This means the project must be explicitly cited in the plan or be consistent with its policies.

For MPOs in air quality nonattainment areas and those encompassing populations in excess of 200,000 people, the MPO is extended additional authority to allocate, in consultation with state officials, available

[1]Title 23 of the United States Code, Section 134, Subsection (g) (23 U.S.C. §134 (g)) and Title 23 of the Code of Federal Regulations, Section 450.122 (23 CFR §450.122).

[2]23 U.S.C. §134 (b)(6)

[3]23 U.S.C. §134 (h)(5)

federal dollars to the projects in its TIP.[4] This recent revision to federal law gives added importance to initiatives developed within the MPO long range plan which are carried forth in later TIPs.

Incumbent with this enhanced role for long range plans in metropolitan areas comes more stringent requirements for plan contents. To some degree, interpretation of these requirements is intended to allow flexibility in the plan contents being extended to the MPOs owing to their varying magnitudes of needs and resources. It is also anticipated that further definition of the regulations will take place as federal review agencies, MPOs and other concerned parties work toward a common understanding and as new planning tools emerge. An example of such a requirement is the need to incorporate public comment in the planning process. Certain minimal conditions are prescribed for the timely provision of public participation. However, it is recognized that the actual methods to offer public participation will vary greatly depending on the size of the region and other factors.

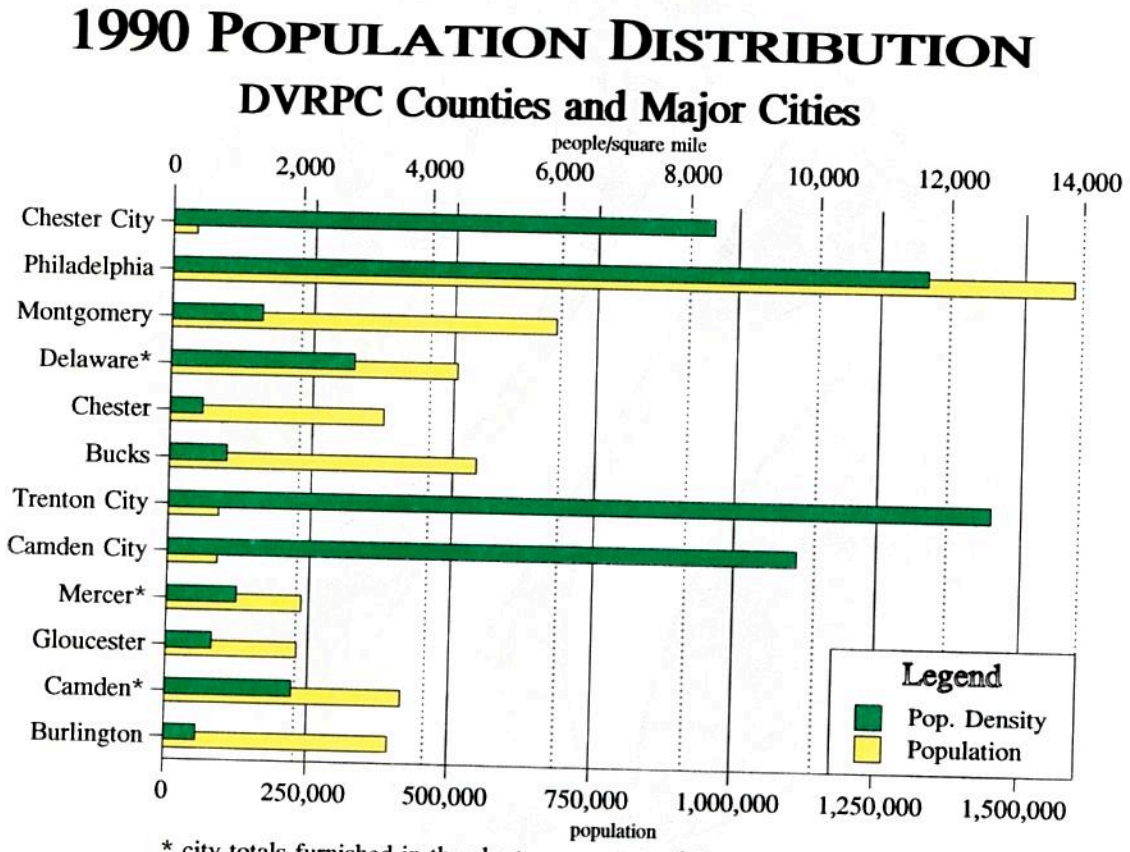
The preparation of all transportation plans and programs by MPOs, including the long range plan and TIP, must first take into consideration fifteen planning factors. These factors insure that plans for the various regions strive toward the common national goals of: increased efficiency, conservation of resources, system continuity, accessibility, and feasibility.

The long range plan is further defined in the regulations in both scope and methodology. Plans are required to consider all major highways, transit lines, other modes, as well as "multimodal" and "intermodal" facilities in identifying and evaluating an *integrated transportation system*. Plans must identify both long range and short range strategies and actions required to address the anticipated demand over a 20 year minimum planning horizon. Plans are further required to identify all adopted strategies to manage congestion that impact the system as well as pedestrian, bicycle and enhancement activities, as appropriate. Plans must stipulate all assumptions used in treating *major investments* in the transportation network in the absence of detailed alternatives analysis. A financial plan must accompany the document which compares the costs of the entire system with the projected available revenues. Any shortfall of revenues must be identified through specific new funding strategies anticipated to be available during the planning period. Moreover, the plan needs to reflect the input of public agencies, private transportation providers and other interested parties, as well as the general public, through early and continued participation in the plan development.

Long range plans for urban areas in air quality nonattainment areas have additional requirements. MPOs in these areas must coordinate the development of long range plan recommendations with the development of transportation control measures (TCMs) incorporated in State Implementation Plans (SIPs), as required by the Clean Air Act. These TCMs are

[4] 23 U.S.C. §134 (i)(4)

Figure 1



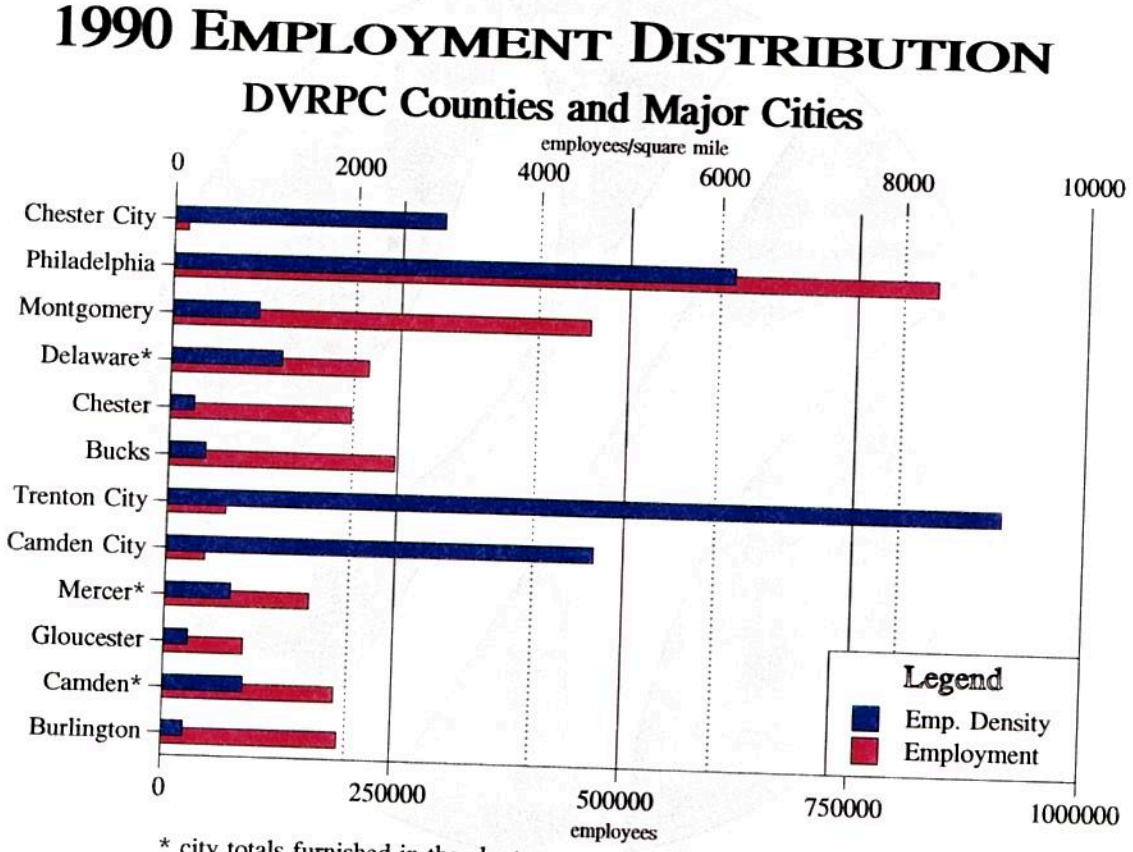
* city totals furnished in the chart were extracted from these county totals

intended to help the region meet its air quality goals through improved transportation system performance. In the DVRPC region, TCMs are identified through a joint process with the Pennsylvania and New Jersey transportation departments as well as county and other officials assisting with development of specific types of TCMs. Long range plans must also be prepared in sufficient detail so that a finding of conformity with EPA regulations can be made. Lastly, the financial plan component must explicitly provide for completion of the activities needed to achieve conformity with air quality requirements.

DVRPC AS THE LOCAL MPO

The Delaware Valley Regional Planning Commission (DVRPC) was formed in 1965 by an interstate compact between Pennsylvania and New Jersey to plan for the orderly growth and development of the region, and to respond to regional issues and needs. The region includes the counties of Bucks, Chester, Delaware, and Montgomery and the cities of Chester and

Figure 2



* city totals furnished in the chart were extracted from these county totals

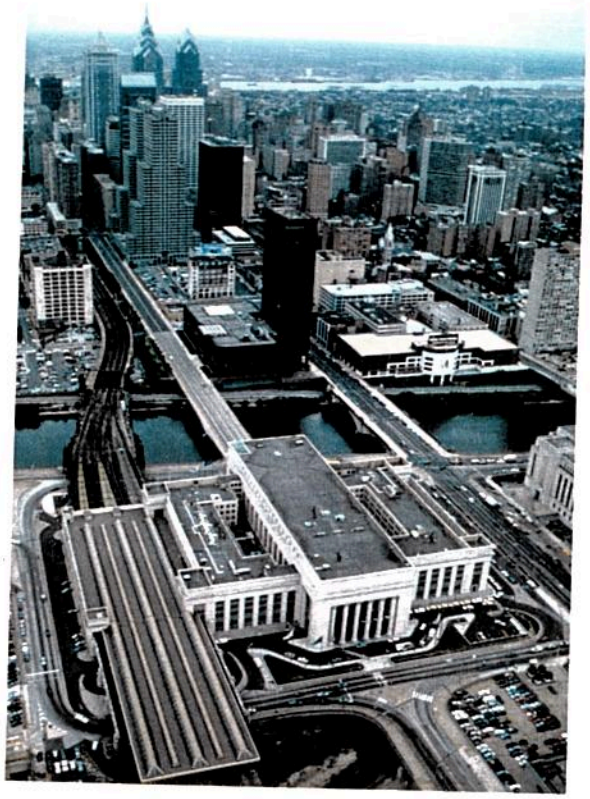
Philadelphia (which is also a county) in Pennsylvania as well as the counties of Burlington, Camden, Gloucester, and Mercer and the cities of Camden and Trenton in New Jersey. As can be seen in the figures of population and employment by jurisdiction, the DVRPC region represents a wide range of demographic conditions. Population densities vary from a low of 489 people per square mile in Burlington County to 12,668 people per square mile for the City of Trenton. Also, the persons to jobs ratio, an approximate measure of the distribution of jobs relative to the work force, varied widely from the regional average ratio of 1.92. These range from 1.39 people per job for the City of Trenton to 2.83 people per job for the City of Chester, which suffered major employer emigration during the 1970s. From the data presented, it is apparent that, with the exception of Trenton, the most densely populated jurisdictions do not coincide with those that have the lowest population to jobs ratio. To some degree, this is a function of the geographic configuration of the counties. It does, however, reflect a continuing trend of exodus by employers from the densely populated urban centers. The implication

for the region is that major employment centers (which need to draw workers from the rest of the region) are increasingly found in areas with low population densities that are poorly suited to conventional transit service.

The census defined Consolidated Metropolitan Statistical Area (or CMSA) for the region extends beyond the DVRPC planning area boundaries affording multiple opportunities for intraregional dialogue and coordination. The CMSA also includes Cecil County in Maryland, New Castle County in Delaware, and Cumberland and Salem counties in New Jersey. The Philadelphia nonattainment area also includes Kent County in Delaware.

Long range planning for Cecil County, Maryland and New Castle County, Delaware is accomplished through the Wilmington Area Planning Council, which serves as the MPO for these jurisdictions. Similarly, Salem and Cumberland counties in New Jersey have enrolled in a newly-formed MPO including Atlantic and Cape May counties, known as the South Jersey Transportation Planning Organization. DVRPC maintains a staff-level dialogue with these two planning bodies as well as their associated state transportation departments. Further coordination with the New Jersey counties is enabled through New Jersey Department of Transportation representation on the DVRPC Board of Commissioners, committees and working groups. Long-range planning for Kent County is conducted by the Dover/Kent County MPO and is coordinated with the Wilmington MPO. The input of long-range initiatives in Kent County upon the DVRPC region is limited, as it is not adjacent to the region.

All MPOs are required by federal law to develop a Transportation Improvement Program (or TIP) either annually or biennially. The TIP is a regionally recognized schedule of all transportation projects—both highway and transit—intended to receive federal funding. The TIP must cover at least a three-year period and must be financially constrained to reasonably anticipated resources. The TIP must also be shown to conform with air quality guidelines for the region.



Amtrak 30th Street Station, Philadelphia

The DVRPC TIP is compiled and evaluated annually. It covers a four-year period in Pennsylvania and a five-year period in New Jersey. Candidate projects are first submitted by state DOTs, member governments and transit operators in accordance with federal guidelines. Projects are then scored by an adopted screening procedure. With suitable opportunities for public comment, projects are listed in the TIP based upon the results of the screening procedure, the requirements of the air quality guidelines, funding limitations, federal mandates and other criteria. In July 1994, the DVRPC Board adopted the final Transportation Improvement Program for fiscal years 1995-98. The FY 1995 TIP identified $1.9 billion in highway improvements and $1.7 billion in public transit improvements (in 1995 dollars).

MOVING PEOPLE AND GOODS

The Delaware Valley long-range transportation plan, *Moving People and Goods,* provides a unified framework for the provision of transportation improvements in the region between 1995 and 2020. It details regionally significant policies, programs and facilities needed to support the existing and anticipated growth in travel. It also contains an extensive list of further studies which, when accomplished, will provide further guidance in accomplishing additional important objectives. The facilities and studies detailed in the plan are denoted as either short term or long term to provide some measure of guidance for their coordinated advancement. Projects found in the adopted FY 1995- 1998 TIP are categorically considered short term.

The *Moving People and Goods* document represents the culmination of a transportation planning process which satisfies all federally prescribed requirements. The goals and objectives of the planning process, as set forth in *Policies for the 21st Century* (DIRECTION 2020 Report #2), included consideration of the fifteen mandated planning factors. The following table summarizes the goals, objectives and strategies applicable to each of the factors. Regional policies were then formulated to carry out these objectives and were subsequently detailed in *DVRPC Year 2020 Land Use and Transportation Plan: The Policy Agenda* (DIRECTION 2020 Report #21). The critique of existing and future travel conditions for each corridor was also structured around the regional goals from the *Policies* document. This critique led to the development of the facilities and studies recommendations found in *DVRPC Year 2020 Land Use and Transportation Plan: Centers and Corridors* (DIRECTION 2020 Report #22).

Required Planning Factors[5]

	Planning Factor	Regional Goals/Policies/Actions	
1	Preserve and maximize use of existing facilities	Policy:	Optimize efficiency of existing transportation systems
2	Conform with energy conservation programs	Policy:	Use transportation demand management techniques for corridor and system planning (see also Planning Factor No. 14)
3	Relieve and prevent congestion	Goal:	Ease traffic congestion through the reduction of single occupant vehicles by better integrating automobile and public transit links, encouraging changes in commuters' travel habits and improving the efficiency of existing transportation facilities and services
		Action:	Encourage transit-oriented land use and mixed-use development
4	Consider the effect of transportation policy decisions on land use and development; consistency with all applicable land use and development plans	Action:	Encourage transit-oriented land use and mixed-use development
5	Program transportation enhancement activities	Action:	Improve and expand bicycle and pedestrian facilities
6	Consider impact of all transportation projects regardless of funding source	Policy:	Increase the levels of public and private investment in regional freight movement activities
		Policy:	Provide more non-auto options for commuters
7	Consider border crossings and access to: ports, airports, intermodal features, freight routes, parks, recreation areas, monuments, historic sites, military installations	Action:	Increase the number of multi-modal transportation centers and park and ride facilities
		Policy:	Create efficient intermodal freight facilities throughout the region
		Goal:	Improve access to and efficiency of the region's transportation network, and ensure the safety and security of the system's users

[5]Refer to 23 U.S.C. §134 (f)(1-15)

	Planning Factor	Regional Goals/Policies/Actions	
8	Insure connectivity across MPO boundaries	Action:	Encourage the participation of freight interests in the joint public/private programming of transportation improvements
		Goal:	Improve access to and efficiency of the region's transportation network and ensure the safety and security of the systems' users
9	Provide for management system identified needs	Policy:	Optimize the efficiency of the existing transportation systems
10	Preserve needed rights-of-way	Action:	Establish opportunities for connections among transportation modes
		Action:	Coordinate operations of oversight authorities responsible for freight movement
		Action:	Encourage transit-oriented land use and mixed-use development
11	Enhance freight movement	Goal:	Promote coordination among freight movement interests and development of an intermodal regional freight movement plan with improvements to air, highway, port and rail systems
12	Consider life-cycle costs for bridges, tunnels, and pavement	Policy:	Optimize the efficiency of the existing transportation systems
		Action:	Program and integrate needed freight movement projects into the TIP process
13	Consider the social, economic, energy, and environmental impacts of decisions	Action:	Encourage transit-oriented land use and mixed-use development
		Goal:	Improve the region's air quality by reducing the number of single occupant vehicles, promoting alternative travel modes and encouraging other measures which will limit emissions from mobile sources
14	Expand, enhance, and increase use of transit services	Policy:	Provide more non-auto options for commuters
		Action:	Promote the use of public transit and ridesharing
		Goal:	Improve access to and efficiency of the region's transportation network and ensure the safety and security of the systems' users
15	Increase transit system security	Policy:	Ensure the safety and security of highway and transit users

The recommendations within *Moving People and Goods* have also been assessed for their impacts on regional air quality. Some of the projects were considered in the results of computerized emissions modelling. Others were evaluated by

empirical means. This procedure is further detailed in Chapter V. The results of the conformity determination are summarized within Chapter IX.

No TCMs from either the New Jersey or Pennsylvania SIP remain unbuilt or not programmed. However, revisions of these documents detailing further actions are in preparation and will be reflected in an updated version of this plan in accordance with the federally prescribed three year update cycle for major metropolitan long range plans. A significant number of the recommendations in *Moving People and Goods* are potential TCM strategies and should be considered for inclusion in the SIPs.

The recommendations within *Moving People and Goods* have also been evaluated with respect to the anticipated financial resources of the region. This includes the completion of the FY 1995-1998 TIP and short term as well as long term recommendations during the overall planning horizon. A discussion of this evaluation is found in Chapter VIII. Given the uncertain nature of predicting future resources, cursory evaluations for individual, large projects and smaller groups of projects based on type were conducted. This resulted in a plan which was constrained to available financial resources rather than address all of the regions needs. These are not meant to constrain the availability of funds to individual projects from year to year. Rather they are meant to provide a long term perspective for desired changes to the overall expenditure of funds. □

II METHODOLOGY

OVERVIEW

The underlying logic of DVRPC's preparation of DIRECTION 2020 was to look at the problems of land use and transportation as a single, interrelated condition. This emerged from both federal requirements for the planning process and in response to observed historical trends (see Chapter IV) linking changes in transportation and land use conditions. As a result, a single plan methodology was crafted to develop both *Moving People & Goods* and the regional land use plan, *Guiding Regional Growth*.

Elements of Plan Methodology

- ☑ Initiate Public Participation
- ☑ Develop Goals & Policies
- ☑ Develop Actions (i.e., Policy Recommendations)
- ☑ Develop Centers & Corridors
- ☑ Accumulate Data
- ☑ Review with Local Officials & Public
- ☑ Assign Centers/Corridors to Project Teams
- ☑ Develop Initial Facility Recommendations
- ☑ Integrate, Constrain, Test and Revise Recommendations
- ☑ Review with Officials & Public
- ☑ Finalize Recommendations and Prepare Plan

It was recognized that regional and sub-regional land use and transportation recommendations would have to be developed simultaneously and implemented concurrently. Since this was a multi-disciplined problem, it was decided to employ project teams working in consultation with each other to prepare the various elements of the plan. This entailed the cooperative efforts of over 20 transportation and land use planners with particular areas of expertise. Although this approach provided a more empirical basis for developing transportation recommendations, it proved highly practical for responding to governmental mandates, developing unified, site specific recommendations and incorporating public comment.

Rather than having a quantitative analysis of deficiencies drive the plan development, analytical tools were used to critique the facility recommendations, recognizing some of the impacts of the land use and transportation policies. A final step in this process will be the incorporation of revised socio-economic projections in the travel forecasting model to further account for the effects of land use and transportation policies. This is anticipated to take place as part of DVRPC's Unified Planning Work Program (UPWP) activities.

In May of 1993, the DVRPC Board adopted a set of regional goals and objectives to frame the development of DIRECTION 2020 land use and transportation recommendations. These goals and objectives will also be incorporated into all subsequent UPWPs to provide direction for all future DVRPC work. These goals and objectives can be

found in *Policies for the 21st Century* (DIRECTION 2020 Report No. 2).

The DVRPC Board also established a Board Year 2020 Plan Committee to oversee the progress of long range planning for the region. This committee, which first convened in August, 1992, is comprised of the entire DVRPC Board of Commissioners and meets on an irregular basis to review key elements of the plan as they are prepared. The table below inventories DIRECTION 2020 publications which include the transportation and land use plans as well as supporting documentation and more detailed planning elements for particular areas of concern.

Land use and transportation recommendations were developed from a combined regional (or "top down") and corridor specific (or "bottom up") approach. *Moving People and Goods* brings together the regionally significant aspects of both facets of this planning process.

DIRECTION 2020 Publications to date

Currently Available:

1. Rating the Region, the State of the Delaware Valley
2. Policies for the 21st Century
3. DIRECTION 2020: The Public Participation Initiative and Policy Statement
4. Press Conference Paper
5. Journey-to-Work Trends in the Delaware Valley Region, 1970-1990
6. Regional Park and Ride Assessment: Highway-Related Facilities
7. Regional Park and Ride Assessment: Highway-Related Facilities Supp. 1
8. Year 2020 County and Municipal Interim Population and Employment Forecasts
9. Transportation Issues and Goals for the Long Range Plan
10. Transportation Centers: Concept and Evaluation
11. Overview of Transportation Control Measures
12. Regional Growth Monitoring-1991
13. Delaware Valley Rental Housing Assessment
14. Atlas of the Delaware Valley
15. Year 2020 Municipal Forecasts of Occupied Housing Units, Vehicle Availability and Employed Residents
16. Journey-to-Work Trends in Camden, Trenton, Chester, and Philadelphia 1970-1990
17. Journey-to-Work Trends in Eight Suburban Townships 1970-1990
18. A Menu of Implementation Options
19. Solutions for Affordable Rental Housing in the Delaware Valley
20. Linking Land Use and Transportation Planning: Case Studies of Successful Implementation
21. DVRPC Year 2020 Land Use and Transportation Plan-The Policy Agenda
22. DVRPC Year 2020 Land Use and Transportation Plan-Centers and Corridors (DRAFT)
23. Guiding Regional Growth
24. **Moving People and Goods**
25. 2020 Zonal Population and Employment Forecasts

Available Soon:

26. Regional Growth Monitoring for the Years 1992-1993
27. Reinvesting in Cities in Transportation Improvements in Urban Areas

28. Southeastern Pennsylvania Bicycle and Pedestrian Mobility Plan
29. Intermodal Freight Plan
30. Summary of Public Comments DIRECTION 2020 Land Use and Transportation Long-Range Plan
31. Year 2020 Regional Airport System Plan

Development of Policies

DIRECTION 2020 policy recommendations can be found in their entirety in the report *DVRPC Year 2020 Land Use and Transportation Plan: The Policy Agenda* (DIRECTION 2020 Report No. 21). For each objective included with the eight regional goals (55 in all) a series of implementation strategies to achieve that objective have also been identified. These implementation strategies include the specific legislative, administrative, fiscal or policy changes needed to make each objective a reality. Included are recommendations for changes at the federal, state, regional, county and municipal levels, as well as strategies for transit operating agencies, bi-state agencies, regional authorities, non-profit organizations, and other identified groups.

DVRPC staff first prepared a wide spectrum of candidate regional policies identifying all parties and actions required. A series of these strategies were set apart as regionally significant based on the nature of the changes involved and the degree of impact of the policy on accomplishing the objective. These candidate policies were released as *A Menu of Implementation Options* (DIRECTION 2020 Report No. 18). This document was distributed to member governments and operating agencies, other identified parties and at all later public participation activities. During this process, policies were evaluated both for content and for their inclusion as regionally significant. Following a lengthy review period, a compatible mix of revised strategies was developed and the draft policy document was released.

The goals, objectives and policies identified represent the collective input of DVRPC, its member governments and operating agencies, and the region's citizens. Future DVRPC work will further define the policies, investigate impediments to their implementation, and prioritize them to the degree possible.

These implementation strategies include both incentives and deterrents, and range from continuing use of certain planning tools and programs through simple changes in existing programs to dramatic changes in policy or state enabling legislation. As such, while some of these actions will be easy to achieve, others present much more complex political challenges and additional financial commitments.

Development of Facilities

Establishment of Centers and Corridors

To develop transportation facilities and site specific land use recommendations, the region was divided into transportation

planning corridors. These corridors extend over reasonable widths to capture parallel highway and transit routes. This method established a planning process which would be inherently intermodal in nature and which would look at transportation facilities in the context of their surrounding development. It also was intended to be fully compatible with other ISTEA and CAAA requirements; most notably the establishment of CMS study area boundaries.

Corridors were created by first overlaying a map of the identified DIRECTION 2020 regional, county, growth and revitalized centers with a highway and transit networks map. Spine routes were chosen based on travel volume, congestion and facility type. Parallel routes were captured in similar fashion keeping in mind the principal nature of the route as being either radial or circumferential to the Philadelphia/Camden and Trenton CBDs. Emerging radial and circumferential routes were also identified to indicate the growing importance of additional facilities. These may be related to regional growth patterns, the impact of new facilities or the effect of urban areas adjacent to the DVRPC region.

In preparing this map, it was determined that a number of locations in the region represented crucial confluences between corridors. These locations had unique land use characteristics often associated with topographic features and previous planning concepts. Center City is perhaps the definitive example of such an area. These locations also invariably corresponded to one or more identified DIRECTION 2020 development centers. As a result, separate **study areas or "centers"** were defined for these locations to properly address their particular conditions.

The centers and corridors map was subjected to considerable review prior to DVRPC adoption. During this process, the distinction had to be clearly maintained that the map was designed to indicate groups of transportation facilities and their surrounding land uses rather than *travelsheds* (i.e., all land uses that are tributary to particular transportation facilities). The adoption of the final corridor boundaries established the means to evaluate both the integrated roles of the various transportation facilities and the nature of surrounding land use and demographic conditions. The final map of regional corridors has been reproduced as Map No. 2 in Appendix A.

Preparation of Corridor Plans

Having defined the centers and corridors for consideration, teams of transportation and land use planners were selected to author what effectively became plans for individual areas. Staff members were selected based upon their familiarity with the areas in question and various resources were compiled to assist their efforts. In many instances, site visits were made to verify existing conditions.

Baseline information collected for each corridor included socio-economic data, journey-to-work data, land use characteristics, travel patterns, forecasted

trends, TIP projects, authority projects where applicable, recommendations of previous planning efforts and mapping. The planning exercise was also framed for each corridor in terms of accomplishing the regional goals and objectives through the means which best suit the area. Study teams then researched the particular issues affecting each corridor.

Building on the TIP, anticipated development trends, the aforementioned regional policies and comments received at citizen *charrettes*, staff teams developed draft recommendations for each area. These comments were reconciled across the boundaries between corridors and centers as well as in other areas where corridors overlap.

The draft *Centers and Corridors* plan assembled these stand-alone plans for each corridor and center showing conditions, trends, problems and land use/ transportation recommendations. Composite maps showing existing land use conditions and transportation facilities were furnished for each area. This draft was then circulated for comments from member governments and agencies as well as interested parties. Because of its voluminous nature, portions of the document were also circulated individually. The entire document was made available via electronic media. During the review process, prioritization of projects as either short term or long term was achieved based upon need and perceived acceptability.

PUBLIC PARTICIPATION

An extensive public outreach effort (detailed in DIRECTION 2020 Report No.s 3, 4 & 30) was integrated with these activities. DVRPC's newly organized Public Participation Committee, which had been charged with guiding the public participation strategy, represented a number of interests, including the business community, the news media, chambers of commerce, port and rail interests, citizens, the disabled, and environmental concerns. To provide this guidance, the committee met on an *ad hoc* basis to recommend various public outreach programs to the DVRPC Board for implementation. This group drafted a Public Participation Initiative and Policy Statement which provides guidance for all future DVRPC public outreach efforts.

Public outreach took many forms including:

- press conferences, periodic newsletters, and meetings held in conjunction with the review of the TIP,
- a resident opinion survey- conducted by telephone, this instrument was intended to obtain statistically significant data regarding various transportation and land use policy questions,

- a general opinion survey-distributed through newspapers and at shopping malls, this instrument was intended to solicit input into the planning process from as large an audience as possible,
- a series of five charrettes (i.e., interactive workshops) held throughout the region where detailed comments were received about two predetermined planning corridors or centers which pertained to each area,
- both policy and facilities plans were made available on the Liberty Net computer bulletin board,
- workshop presentations at the 1993 DVRPC Board Retreat, and
- a speakers' bureau to present DIRECTION 2020 information to various groups throughout the region.

At each point where public interaction was achieved, the public was invited to participate in the ongoing work of DIRECTION 2020 through DVRPC's Regional Citizens Committee. A great deal of effort was made to insure that this body was apprised of all project work in

Chester/Delaware Charrette, August 9, 1994

progress so that their questions and comments could be addressed.

Feedback was folded back into plan development in a variety of ways. Comments regarding the candidate regional policies were entertained when developing the draft policy agenda. Similarly, the results of the Board retreat workshop and opinion surveys were presented to both the DVRPC Board and the Regional Citizens Committee prior to their review of both the draft policy and facilities plans. Also, results from the five charrettes were given to the corridor authors, who often had presided over these same sessions. □

III THE EXISTING TRANSPORTATION SYSTEM

The Delaware Valley's transportation systems are among the most comprehensive of any area in the nation. Sailing ships, followed by barge traffic, railroads, highways, and, finally, airports, have given the region a legacy of extensive transportation systems and make it ideal for economic development. Virtually all types of transportation, both public and private, are currently represented within the nine-county DVRPC area, including highways, transit, trucking, ports, rail, air freight and air passenger systems.

THE HIGHWAY SYSTEM

The Delaware Valley highway system is a network of limited access facilities, arterial highways, secondary collector roads and local streets, reflecting the different uses and periods of highway construction and the programs that have supported the system. Private companies built the earliest inter-regional roads and charged users a fee to "turn aside a pike" and gain entry. While these early roads have long since disappeared, their routes are still followed by modern highways. Examples include the arterial portions of US 30 (Lancaster Pike) and PA 309 (Bethlehem Pike). Following this period, building and maintaining roads was generally considered to be a public function and responsibility gradually shifted from local governments to higher levels. In 1891, New Jersey became the first state to establish a state highway department. The Federal Aid Primary system, created in 1921, established criteria for selecting and marking routes important to interstate commerce. The first continuous coast-to-coast numbered route was US 30, running between Atlantic City, New Jersey and Astoria, Oregon, passing through Center City Philadelphia. Most of the original primary aid highways were built as arterials and, for the most part, they proved adequate to meet the needs of traffic at that time. However, by the end of the 1930s, New Jersey had begun building dualized routes, such as US 1, in order to improve safety and add capacity.

It quickly became evident that existing programs lacked the resources to build the highways that the public demanded. With east-west commerce constrained by the Appalachian Mountains, Pennsylvania established a public turnpike authority and became the first state to float a bond issue to build a new grade-separated expressway. The initial section of the Pennsylvania Turnpike opened between Irwin and Carlisle in 1940, though the Turnpike did not reach the Delaware Valley until after World War II, when it was extended eastward to Valley Forge.

Tolls imposed on users serviced the bonds and provided the means to maintain and expand the facility. Pennsylvania showed that bonds provided a practical way to finance new highways and the practice spread to neighboring states. It abated only with the passage of the Federal Aid Highway Act of 1956, which established the Interstate highway program and the federal trust fund used to pay for it.

The resulting network, composed of layers from several preceding eras, provides access to virtually every developed land

parcel in the DVRPC region. These highways function as an integrated system. The earliest major roads serve to connect major urban centers with each other and major destinations outside of the region. Other older roads provide similar connections to smaller cities and boroughs. A select number of these older roads (e.g., US 202, NJ 73) have since been upgraded to reflect their growing importance as circumferential routes for intersuburan travel. Newer major highways have supplemented both radial routes (e.g., I-76, I-95, NJ 55) and circumferential routes (e.g., I-276, I-295, I-476).

There are 6,244 miles of highway routes in the region, of which 3,895 miles are in Pennsylvania and 2,349 miles are in New Jersey. Of this total, 204 miles are interstate highways; 1,591 miles are other principal arterial routes; 2,005 miles are minor arterial routes; and 2,444 miles are collector routes. Other roads in the region are functionally classified as local roads. The major existing highway facilities are described below.

Limited Access Facilities

Pennsylvania Turnpike (I-76 and I-276)	Toll road running east-west across the state of Pennsylvania, which links the Ohio and New Jersey turnpikes and serves as a partial circumferential route extending around the northern section of Philadelphia.
Northeast Extension of the Pennsylvania Turnpike (PA 9)	Toll facility starting from the Pennsylvania Turnpike at Plymouth Meeting, provides access to Scranton, Wilkes-Barre and the Pocono Mountains resort area.
Schuylkill Expressway (I-76)	Parallels the Schuylkill River from the Pennsylvania Turnpike at Valley Forge (King of Prussia) to the approach to the Walt Whitman Bridge over the Delaware River. In New Jersey, it continues south to connect with I-295 at the NJ 42 Freeway.
Delaware Expressway (I-95)	Parallels the Delaware River and serves the corridor from Wilmington, Delaware to Trenton, where it terminates at I-295. Serves Philadelphia International Airport and Center City Philadelphia.
Mid-County Expressway (I-476)	Traverses a north-south route between I-95 north of Chester and I-276 in Plymouth Meeting, acting as a southward extension of PA 9. Serves as a bypass around Philadelphia through the western and northern suburbs.

Vine Expressway/ North-South Freeway (I-676)	In Philadelphia, connects I-76 with I-95 immediately providing additional access points along the northern edge of Center City. A spur continues the I-676 designation across the Ben Franklin Bridge via the local street network around Franklin Square. In New Jersey, it provides a limited access connection between the approaches of the Ben Franklin and Walt Whitman Bridges with intermediate access points serving the City of Camden.
US 422 Expressway	Connects Pottstown with US 202 at King of Prussia and serves a growing development corridor in Montgomery County.
PA 309 Expressway	Provides a bypass of the old Bethlehem Pike. Completed sections run from Northwest Philadelphia to the Springhouse area in Montgomery County and from Souderton to near Quakertown in Bucks County.
US 202 Expressway	North-south limited access route between West Chester in Chester County and King of Prussia in Montgomery County.
US 202/611 Bypass	Limited access facility which bypasses Doylestown Borough in Bucks County.
US 30 Bypass	Limited access facility which bypasses the Coatesville/Downingtown area in Chester County. A bypass of the Exton community is under construction which will link this facility with the US 202 Expressway at its present interchange with US 30.
US 1 Freeway	North-south limited access facility in Bucks County between Philadelphia County and Trenton which bypasses old US 1 through various commercial areas. The most recent section opened to traffic in 1987.
US 1 Media Bypass	Limited access facility to bypass the Media area between PA 352 and PA 320 in Delaware County.
US 1	Limited access facility in Chester County south of PA Route 52 to a point between Sylmar Road and the Pennsylvania/Maryland state line.
New Jersey Turnpike	Toll facility traversing the region north-south, providing access from the Baltimore/Washington area via the Delaware Memorial Bridge to the Newark/New York area north of Rutherford. Eight interchanges are provided along the 65 mile portion in the Delaware Valley.
I-195	Connects I-295 in Hamilton Township with NJ 34 in the vicinity of the Garden State Parkway and various shore points.

I-295	Parallels the New Jersey Turnpike, serving the corridor from Wilmington to Trenton. Part of the Gloucester County portion was incorporated from a preexisting alignment and remains underdesigned.
Atlantic City Expressway	East-west toll facility connecting the North-South Freeway (NJ 42) at Turnersville with Atlantic City. Limited access highway connections to other south shore resorts can be made via the Garden State Parkway interchange just west of Atlantic City.
NJ 42 Freeway	Provides a limited access connection between the I-76/I-295 interchange and the Atlantic City Expressway.
NJ 55 Freeway	Completed in 1989, extending from NJ 42 in Deptford Township to the Vineland area in Cumberland County, this facility improves access to Salem, Cumberland and Cape May counties from the region. Consequently, it also improves the highway accessibility of this developing portion of Gloucester County from the rest of the region.
NJ 90	Carries traffic between the Betsy Ross Bridge and NJ 73 in Cinnaminson.
Trenton Freeway (US 1)	Limited access bypass of old US 1 through Trenton and a portion of Bucks County, Pennsylvania.

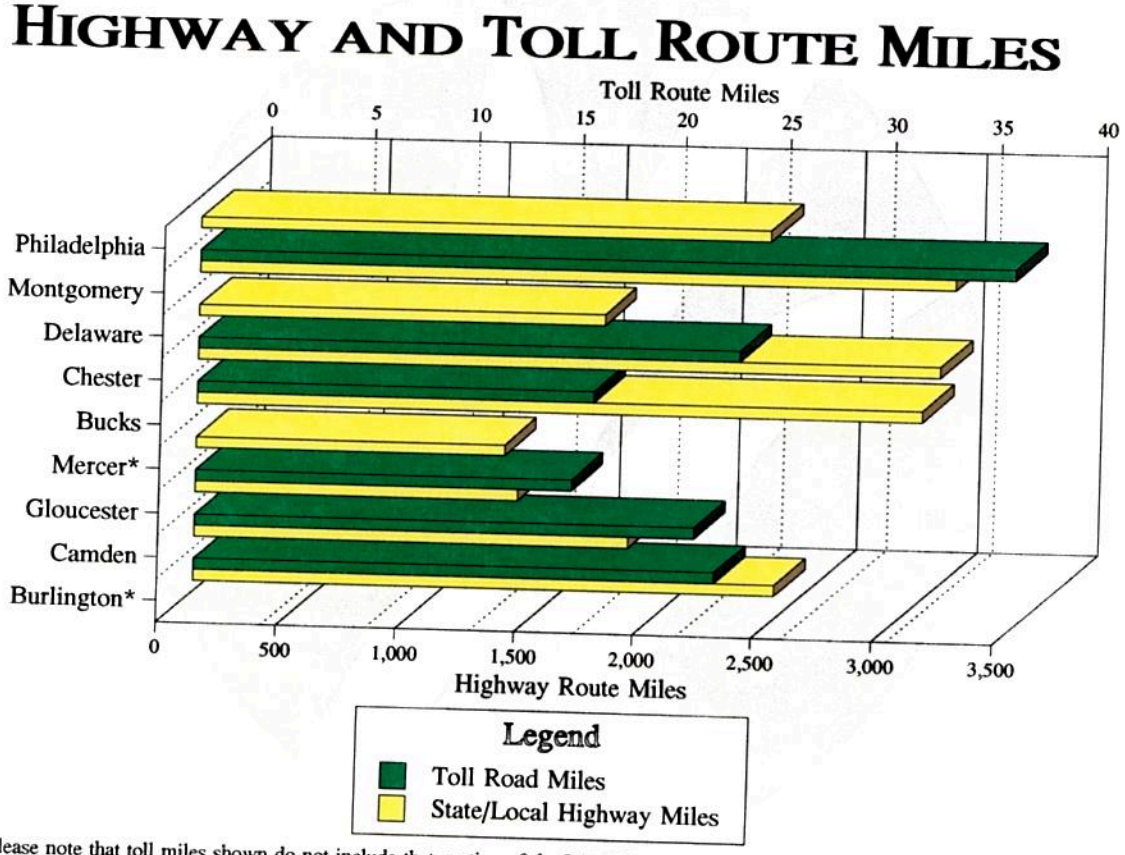
The region's network of limited access highways does not cover all of the trunk corridors important to regional and interstate commerce. In some cases, demand does not warrant the investment in new facilities. In other cases, the shortfall of available construction funds or environmental concerns have delayed or canceled plans for new highways. Travel along these corridors is accommodated by arterial roadways.

Arterial Facilities

An extensive network of major arterial facilities supplements the limited access highway network of this region. An arterial highway, characterized by its use and its design, is usually the main thoroughfare between the established centers of the region. For the most part, these routes predate the limited access facilities, since many are remnants of the earlier federal-aid primary system and others are upgraded older two-lane roads between country towns.

Some of the original primary highways became so heavily traveled that they have been replaced by limited access highways along the same corridor. As a result, these roads now serve a more local function, often providing access to commercial and industrial areas. Examples include US 13, which is

Figure 3



* Please note that toll miles shown do not include that portion of the PA and NJ Turnpikes north of Exit No. 6 to become part of I-95

paralleled by I-95 along the Pennsylvania side of the Delaware River and US 130, which is paralleled by I-295 in New Jersey.

Sometimes, older primary highways are upgraded to expressway status on a piecemeal basis. Under such circumstances, parts of the route are limited access, while other parts are typical arterial roadways. US 202, which serves as a circumferential highway through the western and northern suburbs of Philadelphia, is a good example. Once envisioned to be rebuilt over its entire length as a freeway, only portions have been (or are likely to be) converted.

Arterials provide the connections needed to fill in between limited access highways. Though many of these routes extend radially outward from the region's core of Philadelphia and Camden and, to a lesser degree, from Chester and Trenton, others accommodate circumferential travel.

Collector Roads and Local Streets

Collector roads provide the links between local streets and the arterial and limited access highways. In Pennsylvania, these routes are generally unnumbered. In New Jersey, collectors usually carry secondary route numbers and are under the control of the counties. However, many of these secondary routes are more properly classified as arterials.

The Combined System

The figure on the previous page depicts the number of combined state and local route miles and toll mileages for each of the DVRPC counties. Additionally, the table below indicates the number of state and local bridges, excluding those on toll routes. As can be seen from this information, the Pennsylvania non-toll infrastructure is more developed, with 1.94 times the number of route miles. Pennsylvania also has 7.28 times the number of state and local bridges excluding toll routes. The large bridge differential can be partially attributed to the effects of terrain on development and partially to the proliferation of rail corridors in coexistence with the street network. Both states have considerable lengths of toll roads within the region in predominantly rural and suburban areas that provide valuable intercity connections. Some of these routes also serve significant numbers of automobile and transit commuters.

PA and NJ Highway Bridges[1]

Number of Bridges	County	Number of Bridges	County
610	Bucks	157	Burlington
630	Chester	49	Camden
417	Delaware	85	Gloucester
697	Montgomery	119	Mercer
701	Philadelphia		
3,055	**PA TOTAL**	**410**	**NJ TOTAL**

[1]Existing state and local mileage, bridges with spans>20'. This data is furnished by state DOTs. Data is dated April 20, 1995. This data excludes toll authority mileage.

Highway Bridges Linking Pennsylvania and New Jersey

There are 18 bridges in the region spanning the Delaware River and connecting Pennsylvania with New Jersey, comprising a significant element of the highway network. North of the Trenton area, eight highway bridges connect roads in Bucks County to Mercer and Hunterdon counties, New Jersey. Most of the bridges are minor and are not generally intended for a high volume of commercial traffic. The major bridges in this section are the US 202 toll bridge just north of New Hope and the Scudder Falls (I-95) bridge, which

has no toll. Two bridges link local streets at Trenton.

From Trenton to the Delaware border, there are eight major bridges linking Pennsylvania and New Jersey, all of which are toll facilities. They include:

- US 1 Freeway
- Delaware River Turnpike Bridge (I-276)
- Burlington-Bristol (PA 413/County 541)
- Tacony-Palmyra (PA/NJ 73)
- Betsy Ross (NJ 90)
- Benjamin Franklin (I-676, US 30)
- Walt Whitman (I-76)
- Commodore Barry (US 322)

The US 202 bridge is owned and operated by the Joint Toll Bridge Commission. The Burlington-Bristol and Tacony-Palmyra bridges are operated by the Burlington County Bridge Commission and the Turnpike Bridge is operated jointly by the Turnpike Commissions of New Jersey and Pennsylvania. The Betsy Ross, Benjamin Franklin, Walt Whitman and Commodore Barry bridges are operated by the Delaware River Port Authority (DRPA). The toll on the DRPA bridges is currently $2.00 for non-commercial vehicles. Tolls are collected only on the westbound trip.

South of the DVRPC region, an additional Delaware River crossing carries I-295 between I-95 & I-495 south of Wilmington and the New Jersey Turnpike in Salem County. These twin bridges are operated by the Delaware River & Bay Authority, which also operates the Cape May-Lewes Ferry service.

THE TRANSIT SYSTEM

Transit service in the Delaware Valley is provided by various agencies and private carriers. The Southeastern Pennsylvania Transportation Authority (SEPTA) operates public transportation in the Pennsylvania counties, maintaining one of the most diverse transit systems in the nation. SEPTA bus and rail lines extend into the City of Trenton and regional rail service is also provided to West Trenton, New Jersey and Claymont and Wilmington in Delaware. SEPTA service is augmented in the Pottstown area with local bus service provided by Pottstown Urban Transit (PUT).

NJ TRANSIT Corporation (NJ TRANSIT) provides bus service for Burlington, Camden, Gloucester and Mercer counties, with additional direct service to Philadelphia and various shore destinations. NJ TRANSIT also provides commuter rail services between Philadelphia and Atlantic City, and between Trenton, Princeton and New York. Additional heavy rail transit service is provided between Center City Philadelphia and Lindenwold in Camden County by the Port Authority Transit Corporation (PATCO), which is a subsidiary agency of the Delaware River Port Authority.

The Southeastern Pennsylvania Transportation Authority (SEPTA)

The Southeastern Pennsylvania Transportation Authority provides almost all rail and public transit services within the Pennsylvania side of the region. SEPTA was created in 1964 to consolidate

the routes of several failed, private transit operators. Financial support for current operating expenses is provided by the City of Philadelphia and four suburban counties (Bucks, Chester, Delaware and Montgomery), as well as state and federal subsidies. There are three operating divisions within SEPTA, which offer different types of services in different areas of the region.

City Transit Division

The City Transit Division is the largest of the groups and provides numerous types of transit services. Two heavy rail transit lines, the Market-Frankford Subway/Elevated and the Broad Street Subway, serve as the foundation of this division's services. They are supplemented by five subway-surface light rail, five trackless trolley and 73 bus routes, which together handle 590,000 linked trips on an average weekday.[2]

- **The Market-Frankford Line** carried approximately 191,000 average weekday trips in 1994 and is the most heavily used line in the entire SEPTA system. The line follows an L-shaped route, running east along Market Street from 69th Street in Upper Darby Township through Center City to the Delaware River waterfront, where it turns northward to follow Front Street, Kensington Avenue and Frankford Avenue to its terminus between Bridge and Pratt streets. Service is provided by a fleet of 250 Budd cars, which, although reliable, are noisy and lack air conditioning. These cars are presently scheduled to be replaced by new vehicles by October 1997.[3]

The Center City portion between 40th and 2nd streets operates as a subway and the rest of the route runs on an elevated structure completed in 1922. The western terminus at 69th Street serves as a major transfer point to other rail and bus routes, and handles a significant number of Delaware and Montgomery County commuters. The northeastern terminus provides an important transfer point for travelers to Northeast Philadelphia and adjacent Bucks County, although several other stations on the Frankford end also handle significant numbers of transfer passengers. At the Frankford end, the entire elevated structure is being renovated, while under operation, in the largest reconstruction project in SEPTA's history.

- **The Broad Street Subway** is a north-south line running underground between Fern Rock station and Pattison Street via City Hall, where passengers may transfer for free to the east-west Market-Frankford Line. The line carried roughly 134,000 average weekday trips in 1994. Philadelphia's sports complex is located adjacent to the Pattison Avenue station. A spur under Ridge Avenue provides a direct connection to Eighth & Market streets from Fern Rock. Many of the stations have been recently refurbished. Service is provided by a fleet of 125 air-conditioned cars acquired from Kawasaki in 1983. In

[2] *SEPTA Ridership and Statistics Report*, Fiscal Year 1994, Southeastern Pennsylvania Transportation Authority, Philadelphia, PA, 1994, p. 21.

[3] *SEPTA NEWS*, Fall 1994, Southeastern Pennsylvania Transportation Authority, p.1.

1991, express tracks were extended northward from Erie to Olney Avenue.

- **Subway-Surface Light Rail Service** is currently offered on five regularly scheduled routes, all in West Philadelphia. The lines operate on the street west of 40th or 36th Streets and underground east to 13th Street in Center City. The Subway-Surface fleet currently consists of 112 air-conditioned Kawasaki cars purchased in 1983. One other line, the Chestnut Hill Trolley, operates only on weekends along the northern portion of Germantown Avenue in the Chestnut Hill and Mount Airy communities. This route is served by 1940's vintage rolling stock.

- **Trackless Trolley Service** (electric bus service) is operated by SEPTA on five routes; three act as feeders to the Market-Frankford line in Northeast Philadelphia, emanating from the Frankford and Margaret-Orthodox stations. The remaining two provide feeder service to the Broad Street Subway in South Philadelphia at the Snyder Avenue and Morris/Tasker Street stations.

- **Bus Routes**—The City Transit Division operates diesel buses, which carry about 52 percent of the division's riders.[4] Several routes go beyond the city limits into areas of Bucks, Montgomery and Delaware counties. Due to an aggressive program of bus replacement, the average age of the SEPTA bus fleet is roughly 10.5 years.

- **Maintenance Facilities**—Within the City Division, there are currently seven bus and light rail maintenance facilities. With the exception of two new facilities, one at 26th Street and Allegheny Avenue, the other at Island and Elmwood Avenues, most of these facilities are quite old and outdated. Consequently, maintenance is more expensive than it would be at modern facilities. The number of facilities is also insufficient to adequately handle all of SEPTA's rolling stock.

Regional Rail Division

In FY 1993, the Regional Rail Division operated commuter trains on a total route length of 264 miles and carried an average of 90,000 trips per weekday.[5] SEPTA's Regional Rail lines include:

- **R1:** Service between Warminster and Philadelphia International Airport

- **R2:** Service between Wilmington/ Marcus Hook and Center City Philadelphia; service between Center City Philadelphia and Warminster

- **R3**: Service between Elwyn and Center City Philadelphia; service between Center City Philadelphia and West Trenton

- **R5:** Service between Parkesburg/Paoli and Center City Philadelphia; service between Center City Philadelphia and Lansdale/Doylestown

- **R6:** Service between Norristown and Center City Philadelphia; service between Center City Philadelphia and Cynwyd

[4]Ibid., p. 22

[5]Statement of Louis J. Gambaccini, General Manager of SEPTA, on the proposed DVRPC Year 2020 Plan (dated 6/29/95), p.5.

- **R7:** Service between Trenton and Center City Philadelphia; service between Center City Philadelphia and Chestnut Hill East

- **R8:** Service between Chestnut Hill West and Center City Philadelphia; service between Fox Chase and Center City Philadelphia.

Commuter rail service in the Southeastern Pennsylvania area was originally offered by the Pennsylvania and Reading Railroads. The Pennsylvania Railroad commuter trains served the Main Line, the county seats of Norristown, West Chester and Media, the Delaware River corridor into Marcus Hook, the Chestnut Hill area, and Trenton. The Reading also operated into Chestnut Hill, Norristown and Trenton, as well as other communities north of Philadelphia, including the county seat of Doylestown.

Both companies had extensive route networks that together fanned out in all directions on the Pennsylvania side of the Delaware River. Most routes were electrified as electric traction was required for entry into the Pennsylvania's Suburban Station. The Reading operated some diesel trains into Reading Terminal.

In New Jersey, the two railroads created a joint venture called the Pennsylvania-Reading Seashore Lines which provided both freight and passenger service. Passenger service generally emanated from Camden to outlying cities and boroughs Additional lines ran between Philadelphia and various shore destinations via Lindenwold. In Camden, passengers transferred to either a river ferry or a light rail line which ran across the Ben Franklin Bridge. When the PATCO line opened in 1969, service on parallel commuter rail lines ended.

When Conrail was formed in 1976, from the remains of the Penn Central, Reading and four other bankrupt railroads, it took over operation of the remaining commuter lines, which were by then functioning with public subsidies. Service on most of the non-electrified lines ended in 1981.

In 1983, SEPTA took over direct operation of the Pennsylvania trains and became owner of most of the track and structures over which they run. Principal exceptions are the Northeast Corridor, the Harrisburg Main Line and the West Trenton Line north of Neshaminy Junction. The first two lines had earlier passed to AMTRAK upon the formation of Conrail. The latter is part of Conrail's main freight line between Philadelphia and Newark, New Jersey.

Though the overall route mileage had shrunk somewhat from earlier years, SEPTA first continued to operate the old Penn Central and Reading systems separately. A major change to this practice occurred late in 1984 when the Center City Commuter Tunnel opened, connecting the two separate rail systems. Reading routes were paired with Pennsylvania routes and schedules were rewritten to allow through operation from one side to the other. Riders are able to reach any of the three Center City terminals, regardless of the route from which their trip originated.

The construction of a new passenger line to Philadelphia International Airport was the second major capital project completed

in recent years. It significantly expanded the utility of the rail system, enabling passengers to transfer to the Airport line from any other regional rail line. Although the route took advantage of existing track for much of the way, the track had to be upgraded to passenger standards and supplied with overhead power for electric traction.

Suburban Transit Division

The Suburban Transit Division is composed of the Victory and Frontier Districts. Each of these districts has its own routes, garages and labor contracts.

- **The Victory (formerly Red Arrow) District** operates eighteen bus routes, fourteen out of its principal terminus at 69th Street in Upper Darby Township. Other bus routes focus on the Darby Terminal with its light rail connections to West Philadelphia and City Hall, and the City of Chester.

There are also three rail lines operating out of 69th Street. Two of them are light rail lines (Sharon Hill and Media). The third rail route possesses some rather unique characteristics. Route 100, commonly referred to as the "Norristown High Speed Line", runs for almost 14 miles through suburbs to the Norristown Transportation Center. It is fully grade separated with third rail electrification. Yet, it provides a light rail form of service with frequent, single car service, on board fare collection and station stops by request. The rolling stock on this line was upgraded during 1993 and 1994, providing a more comfortable, air-conditioned ride.

- **The Frontier District** provides 13 bus routes to selected outlying portions of the region. Six routes extend SEPTA's service north and west from the Norristown Transportation Center. Additional routes connect King of Prussia with West Chester, and Chestnut Hill with Lansdale. Other routes originate at the Oxford Valley Mall and serve lower Bucks County and the Trenton area.

Early in 1988 in response to employer requests for transit service to their sites, SEPTA created a new class of suburban service—feeder bus routes designed to connect office centers and industrial parks with nearby regional rail stations. These routes, called the "200 Series", are scheduled to pulse with train arrivals at the Fort Washington, Willow Grove, Warminster, Paoli and Lansdale stations, and to offer lower fares for transfer passengers. Six routes were established, financed in part by employer subsidies. However, patronage remains light and one route, originating from the Pennbrook Station in the Lansdale area, was discontinued. An additional route between Wayne Station and King of Prussia, operates only on Saturdays.

NJ TRANSIT Corporation

The NJ TRANSIT Corporation is one of two principal transit service providers in the South Jersey portion of the region and provides transit service across the Delaware River between New Jersey and Philadelphia. There are three Divisions, each providing service to separate regions of the state.

Southern Division

Bus operations in South Jersey consist of 35 regular and seasonal bus routes, 16 of which provide service to Philadelphia from Camden, Burlington and Gloucester counties. These routes carried 66 percent of the ridership for NJ TRANSIT's Southern Division. Local intrastate service is provided on 10 routes, carrying 21 percent of the ridership. While these latter routes focus mainly on Camden County, some extend into Burlington and Gloucester counties.[6]

Bus service to shore points from the DVRPC region is provided by nine regular and seasonal bus routes, four of which terminate in Atlantic City. Trips between Philadelphia and seashore points originate and terminate at the Greyhound Terminal located at Tenth and Filbert streets in Philadelphia. Seashore service represents 13 percent of the ridership in the Southern Division.

Seventeen routes are served by conventional transit buses with rear exit doors on which the payment of exact fare is required. The remaining 18 routes are served by intercity passenger buses which have single doors at the front of the bus and drivers provide change on these routes.

Although the infrastructure, fixed facilities and rolling stock of NJ TRANSIT's Southern Division currently remain in adequate condition, steps are being taken to improve the existing service. One of the major initiatives is the replacement of 84 buses in the existing fleet of 318. These replacement buses are a combination of transit and intercity passenger style buses. Intercity style buses serve the New Jersey shore routes and some of the Philadelphia oriented routes.

In 1989, a new transportation center opened in downtown Camden on Broadway to provide off-street parking and station facilities for both NJ TRANSIT bus lines and the PATCO rail transit line to Philadelphia. Except for some express commuter routes running on I-676, all bus routes passing through Camden stop at the transportation center. Another important addition to NJ TRANSIT's infrastructure is the $17 million Washington Township Maintenance Facility in Gloucester County, which was completed in July 1988. The subsequent Newton Avenue Garage Building in Camden City houses the administrative offices for the Southern Division, in addition to providing bus maintenance.

NJ TRANSIT Mercer

NJ TRANSIT Mercer provides 11 regular bus routes within and between Trenton and Mercer County, with some service extending to Hunterdon County. Many of the bus routes originate outside of Trenton and provide local service into downtown Trenton, where transfers can be made, then continue outbound to other suburban communities. NJ TRANSIT has also contracted with Mayflower Contract Services to provide express shuttle service along the US 1 corridor between Ewing and Plainsboro in Middlesex County. The actual route of the service in the Ewing area will vary based upon customer reservations.

[6]Source: NJ TRANSIT

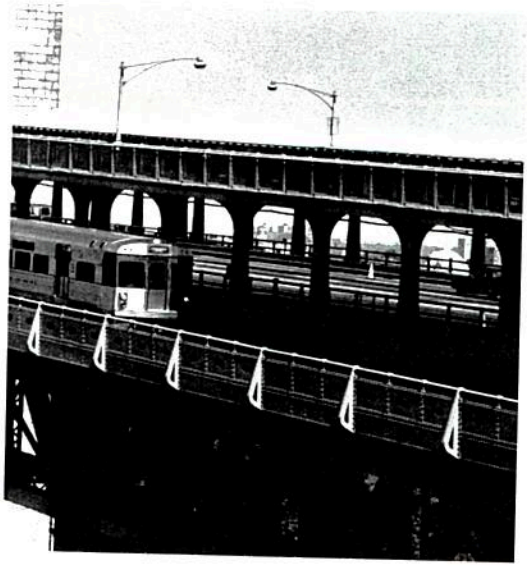
Rail Division

NJ TRANSIT operates 12 weekday round trips and extra service on weekends between Atlantic City and Lindenwold. Nine of the weekday round trips terminate at 30th Street Station in Philadelphia and the others at the new Cherry Hill Station. Within the region, intermediate stops are made at Garden State Park in Cherry Hill, the PATCO High Speed line Station in Lindenwold and Atco Station on NJ 73. A joint ticketing agreement exists between NJ TRANSIT and AMTRAK for connecting services at 30th Street Station.

Along the Northeast Corridor, NJ TRANSIT rail carries passengers between Trenton, Princeton Junction, Newark Penn Station (with connections to other NJ TRANSIT rail lines and PATH trains) and New York Penn Station. A shuttle operates off the Northeast Corridor between Princeton Junction and Princeton.

Port Authority Transit Corporation (PATCO)

The Port Authority Transit Corporation currently provides regularly scheduled heavy rail service to Camden County. The 14.2-mile line was constructed during 1966-69 by PATCO's parent organization, the Delaware River Port Authority, using its own financial resources. Costs were minimized by connecting an existing rail line to a reconstructed transit line over the Benjamin Franklin Bridge.



PATCO High Speed Line

This line provides rail service 24 hours a day, seven days a week between Lindenwold in New Jersey and 16th and Locust Streets in Philadelphia. There are seven stations in suburban Camden County, all of which are adjacent to park-and-ride lots. The line also has four subway stations in Center City Philadelphia and two in the City of Camden, all providing convenient pedestrian access to commercial and employment areas. The Camden Transportation Center provides transfer connections to buses, as well as access to Cooper Hospital and the adjacent portions of the central business district. The City Hall station at Fifth and Market Streets in Camden provides access to the Camden campus of Rutgers University.

AMTRAK

AMTRAK operates intercity rail service from Philadelphia's 30th Street and North Philadelphia Stations as well as Princeton Junction and Trenton Stations in New

Jersey. Frequent service is offered along the Northeast Corridor between Washington, DC and New York City. AMTRAK also schedules regular service between New York, Pittsburgh and Chicago via the Harrisburg rail line with additional, state supported service provided between Philadelphia and Harrisburg. AMTRAK service interfaces with regional rail service at Ardmore, Paoli, 30th Street, North Philadelphia, Trenton and Princeton Junction Stations. AMTRAK and SEPTA both serve Harrisburg line stations west of Paoli.

Pottstown Urban Transit

PUT serves the western portion of Montgomery County and northern Chester County. The current system consists of four bus routes offering daily service to the Borough of Pottstown and its surrounding communities. Service is provided by a fleet of eight regular buses with additional paratransit vans. PUT is operated and maintained by a private company on behalf of the Borough. In fiscal year 1994, PUT served over 250,000 riders. With the expansion of service in Chester County in October of 1994, PUT now has over 11 miles of bus routes to serve Chester County residents.[7]

AVIATION

Aviation planning for the Delaware Valley is conducted for a 12 county Aviation System Planning Region. This region includes all of the DVRPC region as well as Salem County, New Jersey, New Castle County, Delaware and Cecil County, Maryland. The facilities in this region are comprised of five classes: general aviation (small business and recreational), business aviation (corporate, charter and courier), commercial (passenger airline), military and air cargo. Currently, there are a total of three commercial airports, 12 reliever airports, 10 general aviation airports, four heliports and three military airports in the DVRPC region. The major facility for aviation within this region is Philadelphia International Airport (PHL), located partially within the City of Philadelphia and partially in Delaware County. PHL handles roughly 400,000 flights per year. Most of PHL's flights are commercial in nature with an annual 15 million passengers. An additional 400,000 of the region's two million flights per year are handled at the military bases.

FREIGHT MOVEMENT

The Delaware Valley region possesses an extensive array of transportation facilities devoted to the movement of goods. Furthermore, services available in the region are diverse, with carriers handling a wide variety of cargoes serving numerous markets. Freight movement in the region can be organized into four basic categories: truck operations, rail freight, port facilities, and air freight. Many goods are transported within the region by more than one mode to their final destination. Thus "intermodal" connection points, where the various modes converge, are very important and have a significant impact on overall freight operations.

[7]Source: Pottstown Urban Transit

Truck Operations

Trucking operations in the region are quite varied. There are a large number of for-hire carriers (from local operations to national trucking firms), as well as shippers with their own vehicle fleets.

Both Pennsylvania and New Jersey have demarcated routes for larger trucks (53' long, 102" wide, and twin trailers). Operation of these vehicles on deviations from these routes, or operation of larger vehicles, requires a special permit issued by the state or the City of Philadelphia, as appropriate. The large truck network includes all interstates, many arterial routes, and other roads that serve important truck destinations, such as port facilities.

Rail Freight

The region's rail freight network includes three Class I (Large) rail freight operators. The Class I rail lines are: CSX, Conrail, and CP Rail. The region represents a northern terminus for the CSX system, a southern terminus for CP Rail, and an eastern terminus for Conrail. All three railroads enjoy access to the port facilities in South Philadelphia.

Among the most prominent rail intermodal facilities in the region are: CSX's facility at Snyder Avenue in Philadelphia, CSX's Twin Oaks Auto Facility, Philadelphia Regional Port Authority (PRPA)'s Pier 98 Annex, Conrail's Morrisville facility in Bucks County, and DRPA's Ameriport facility in Philadelphia. Daily trains from these facilities serve the Midwest and Canada. The facilities handle domestic and international cargoes principally in containers and trailers.

Several smaller railroad operations (i.e., shortlines) in the region provide "door-to-door" services to shippers. These shortline operators include: the Brandywine Valley, Delaware Valley, Upper Merion and Plymouth, Blue Mountain and Reading, New Hope and Ivyland, and Southern Railroad of New Jersey.

In 1995, double-stack container train service was initiated in the region. Following a unique private/public initiative, sponsored by the affected railroads and Pennsylvania, rail clearances were raised to approximately 21 feet at more than 130 locations throughout the state to permit the passage of double-stacked containers. This project was intended to assure the competitiveness of the ports in trying to attract and retain international waterborne commerce.

Port Facilities

Located 90 miles from the Atlantic Ocean, the Delaware River terminals in the region form the largest freshwater shipping complex in the world. The ports of Philadelphia handle the largest volume of international tonnage on the East Coast. Much of this tonnage is imported crude oil. Other notable imported cargoes are fruit, cocoa beans, paper products, meat, and steel. Export cargoes include scrap metal, petroleum products, chemicals, vehicles, and pulp.

Port facilities are found on both sides of the river. Principal general cargo facilities in New Jersey include the Beckett Street

Terminal, Broadway Terminal, Crowley Marine Terminal at Petty's Island, and Holt Cargo. Pennsylvania facilities include the Packer Avenue Marine Terminal, Penn Terminals, Atlantic Marine Terminals, Pier 78-80, Pier 84, Pier 96 and the Tioga Marine Terminals.

One of the most significant freight system improvements under consideration by local port interests is called FastShip Atlantic. FastShip Atlantic is a novel ship design and logistics concept to convey trans-Atlantic cargo at speeds roughly twice as fast as traditional cargo ships. Vessels will gain their increased speeds through the utilization of marinized jet engines and modified hull design, and will be smaller than traditional cargo ships. The overall FastShip concept is a door-to-door logistics system designed to facilitate improved inventory and management control for shippers. The DRPA has entered into an agreement with FastShip Atlantic, whereby the DRPA will construct a high-technology terminal facility dedicated to FastShip Atlantic in exchange for the Port of Philadelphia and Camden's status as the East Coast exclusive port of call for FastShip for the next 20 years. The study phase of the FastShip project has been funded in part by DRPA, with some private backing as well. The FastShip terminal is proposed to be located at the Philadelphia Naval Ship Yard (PNSY).

Unification of bi-state port operations, long under discussion, has recently intensified. The DRPA, through Amended Compact Legislation in 1992, was charged with the role of port unification. To fulfill this objective, the DRPA created the Port of Philadelphia and Camden, Inc. (PPC), which is a subsidiary of the DRPA with its own Board. The PPC is intended to unify all public port management functions under a single organization. As originally envisioned, staff from the DRPA's World Trade Division, the Philadelphia Regional Port Authority (PRPA) and South Jersey Port Corporation (SJPC) will be merged into the PPC. Unification is underway; the DRPA World Trade Division is now under the auspices of the PPC, and the the PRPA and SJPC are expected to become part of the PPC in the near future.

Air Freight

Philadelphia International Airport (PHL) is currently ranked fifteenth in the nation for cargo tonnage handled. Cargo at PHL is predominantly handled through a separate terminal, Cargo City, at the western end of the main runway with 339,000 square feet of working space. Federal Express and the U.S. Post Office are two of the major shippers located there. United Parcel Service maintains its own separate cargo terminal. Access to Philadelphia International Airport is excellent; it is located on I-95 and is easily reached from all of the area's major highways.

BICYCLE AND PEDESTRIAN FACILITIES

Bicycling within the region shows a strong recreational orientation. Although more than 200 miles of existing bicycle facilities exist, the existing system is primarily recreational. Many of these facilities are trails located within parks and do not provide easy access to employment centers, town centers or transit stations. Consequently, it is not surprising that less than one percent of the region's workers

bicycled to work in 1990. Recent efforts have been made to address some of these access issues. One noteable element is bike-on-rail. SEPTA's Bike-on-Rail policy permits access to various non-peak hour Regional Rail, Market-Frankford Line and Broad Street Line trains by passengers with bicycles. Bicycles are stored in train areas set aside to accommodate wheelchairs when not required for handicapped patrons. NJ TRANSIT and PATCO also have similar policies for their rail lines.

A Proposed Southeastern Pennsylvania Bicycle Network has been developed using the existing bicycle facilities as a foundation. The proposed network is the result of a collaborative effort among county planners, PennDOT, bicycle clubs, and the general public. The goal of the network is to provide options to and reduce dependency on the automobile. Consequently, the factors that were considered in adding a route to the network include: density of a community; proximity to large employers, transit, and schools and universities; and location of existing bicycle facilities.

In addition, several communities throughout the region have outlined transportation oriented bicycle plans within their master plans. In many cases, not only do these bicycle plans connect with existing facilities in a community, but they also provide transportation to key community destinations.

Philadelphia has a well recognized reputation for being a pedestrian friendly city. This is particularly true of the Center City area with its network of side streets and alleys. Relatively compact development forms in Philadelphia and other older communities also are conducive to pedestrian travel. This is not true of newer communities, however. Widely separated land uses, lack of sidewalks and other amenities, and high vehicular travel make walk trips largely impractical. □

IV HISTORICAL TRENDS

REGIONAL GROWTH CHARACTERISTICS

Population

The population of the Delaware Valley region is increasing slowly, reflecting the continuing vitality of the metropolitan area. In 1990, the U.S. Census reported population for the DVRPC region was 5,182,705, a 3.2% increase over 1980. With the exception of a slight downturn between 1970 and 1980, the region has exhibited a continuous post-World War II growth in population. This trend, coupled with the growth in trip making associated with an increasingly mobile society, helps insure a rising overall demand for transportation systems and services in the region.

The largest contributor to the increasing mobility of the population nationwide has been the personal automobile. The automobile has minimized the advantages of proximity to public transportation systems. Because of the highly concentrated development form and

Figure 4

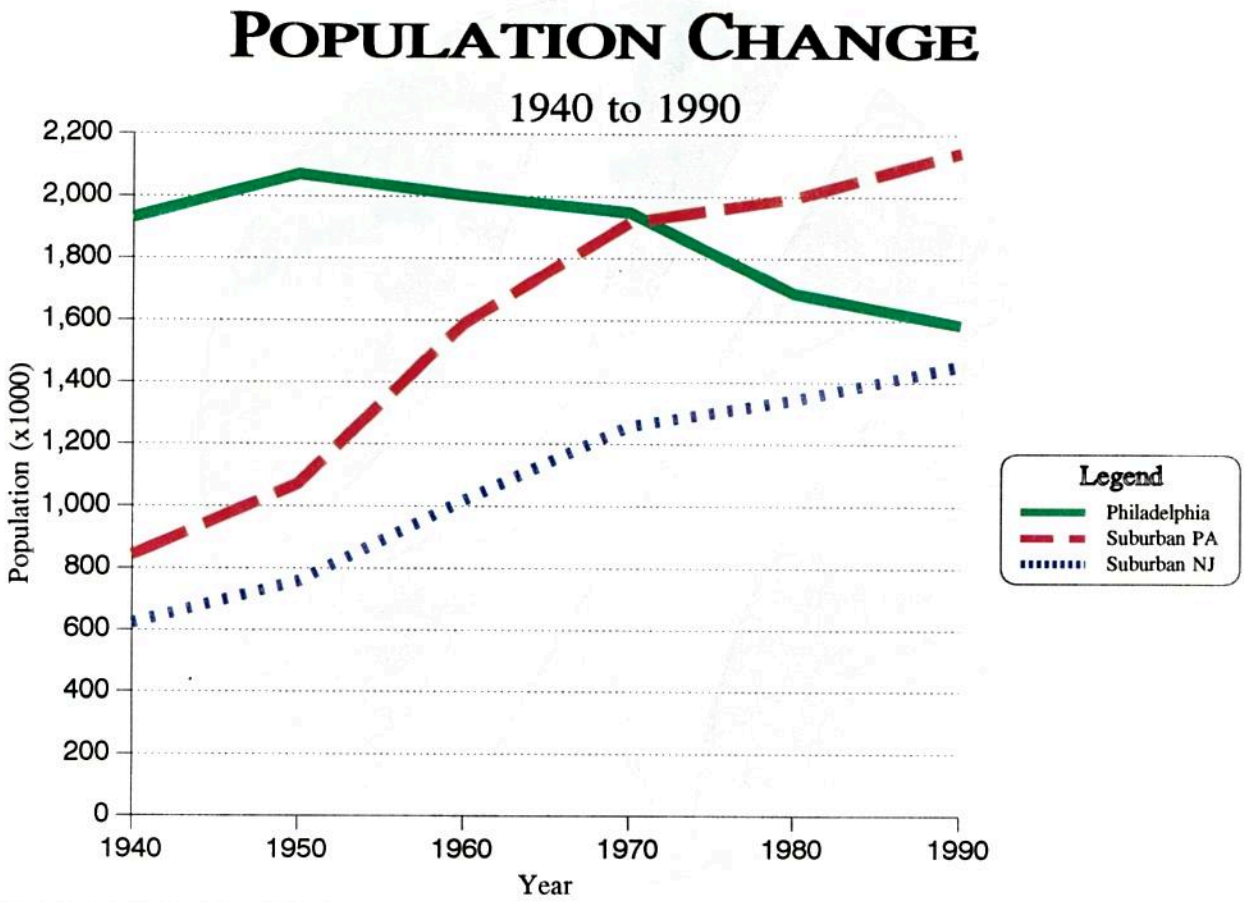
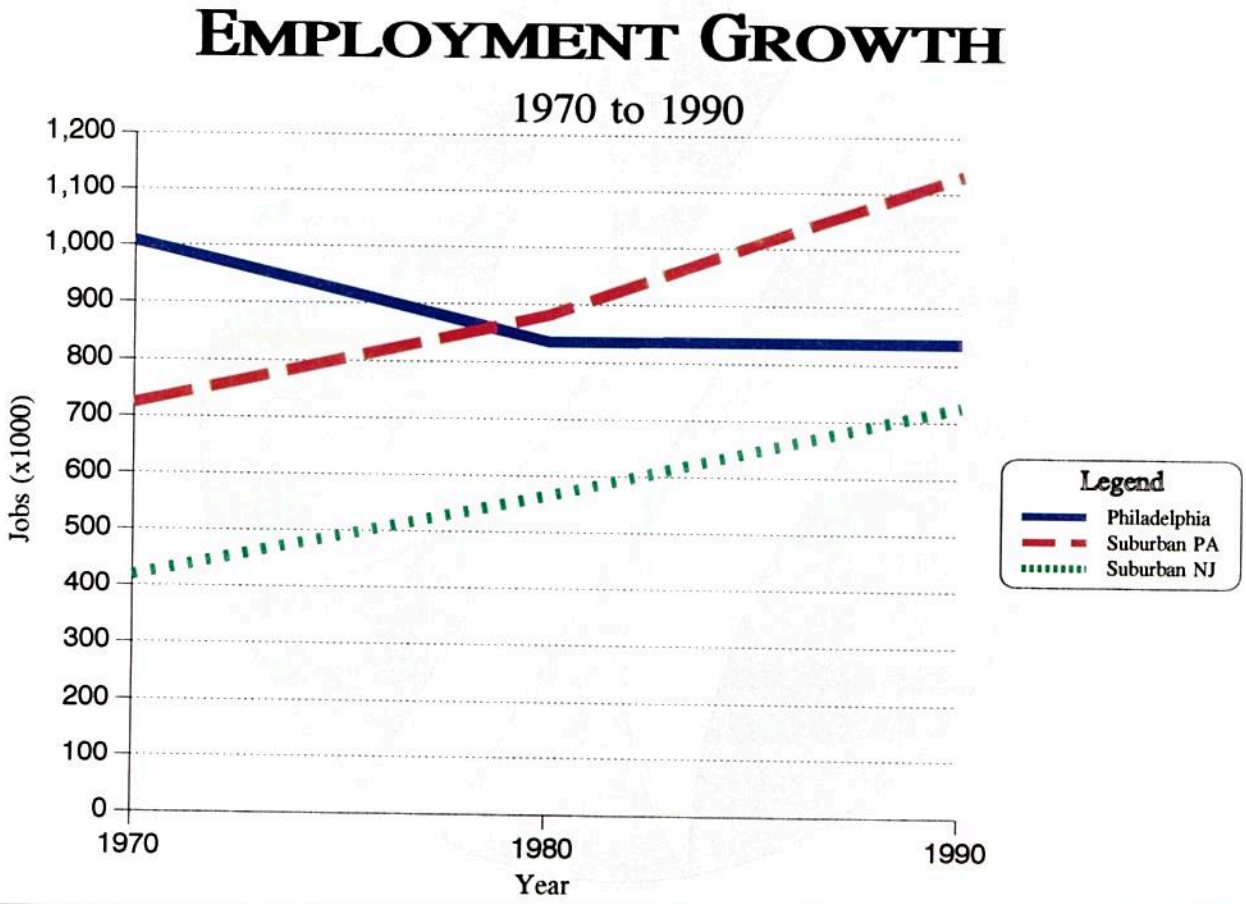


Figure 5



extensive transit network in this region, the local impacts of these trends have been both prolonged and dramatic. This is best evidenced when comparing demographic information for the City of Philadelphia with the surrounding counties.

The population of the City of Philadelphia peaked with the 1950 census at 2,072,000, and has been declining since. The 1950 census also marks a point at which population increases in both the Pennsylvania and New Jersey suburbs began to accelerate significantly. The cities of Camden and Trenton experienced the same pattern of out-migration.

Employment

Similarly, employment in the Delaware Valley has been steadily rising over a period of years despite changes in the national economic climate such as the decline of some sectors of the economy. In 1990, the U.S. Census reported 2,694,000 employed persons for the DVRPC region, an 18% increase over 1980. These figures are reproduced from DIRECTION 2020 Report #15: *Year 2020 Municipal Forecasts of Occupied Housing*